ADDENDUM

JULY 28, 2005

CHANGES TO PART I

NO CHANGES AT THIS TIME

ADDENDUM

JULY 28, 2005

CHANGES TO PART II

NO CHANGES AT THIS TIME

ADDENDUM

JULY 28, 2005

CHANGES TO PART III

PART III

COUNTY
WATER AND SEWER PROJECT
CONSTRUCTION SPECIFICATIONS
CHESTERFIELD COUNTY, VIRGINIA

***INSTRUCTIONS* for viewing and/or printing this document:**
To view PART III, click on the blue highlighted area above. After pulling up PART III, click on "**BOOKMARKS**" in the left hand margin of the document to locate various sections within the document. To print the document in its entirety, click FILE – PRINT. (When printing the document, please remember to print this table of contents and include it in your book.)

TABLE OF CONTENTS

The Owner reserves the right to require the Contractor to work outside of normal working hours in the interest of public safety or convenience. No claim for additional compensation shall be made by the Contractor when such occasions occur.

Except for Work that is scheduled outside of normal working hours by the Owner in order to promote public safety or convenience, the Contractor will be liable for the expense of overtime work of the Owner's employees required by reason of the Contractor performing work outside normal working hours.

32. CHANGE OF PLANS

The Engineer, with the approval of the Owner, may make alterations for line, grade, plan positions, dimensions, materials or any other part of the Work, either before or after commencement of the Work.

33. CORRECTION OF WORK

The Contractor shall promptly remove from the premises all work rejected by the Engineer or Inspector for failure to comply with the Contract Documents, whether the rejected work is incorporated into the Work or not. After removing the rejected work, the Contractor shall promptly replace and re-execute the work in accordance with the Contract Documents, without expense to the Owner. The Contractor shall repair, at its own expense, all work of other contractors that is destroyed or damaged by the Contractor or any subcontractor.

All removal and replacement work shall be performed at the Contractor's expense. If the Contractor does not remove rejected work within ten (10) calendar days after it receives written notice from the Owner or Engineer to remove it, the Owner may remove the rejected work, and store the materials, at the expense of the Contractor.

34. EXISTING STRUCTURES

The location of existing sewers, water and gas pipes, conduits and other structures across, along or under the area of the Work are not necessarily shown on the Contract Documents, and if shown, the description, composition, location, depth and dimensions of those structures may not be correct. The Owner shall not be responsible to the Contractor for any delays or extra costs incurred by the Contractor as a result of any discrepancy between the actual location of existing structures and the Contract Documents or as built drawings. The Contractor shall have a working pipe locator on the job at all times.

The Contractor shall dig such test holes as are needed to locate existing underground structures. The contractor shall dig such test holes only after giving 48 hours prior notice to the Owner and to the owner of the underground structure.

35. CARE FOR EXISTING STRUCTURES

The Contractor shall be liable for all damage to any existing structure or property arising from its negligence or carelessness. The Contractor shall protect and maintain all underground, overhead or surface utilities encountered while performing the Work. The Contractor shall locate and adjust water valve boxes on existing water lines in order to facilitate turning water off so that appropriate tie-ins can be made.

Forty-eight (48) hours prior to commencing work, the Contractor shall contact the Utility Information Center ("Miss Utility"), telephone number 1-800-552-7001, for assistance in locating existing underground utilities.

The Contractor shall not kill, deface or cut down trees unnecessarily, both within and outside of project work areas or easements.

The Contractor shall be responsible for all damage to property not in the Work area or easements.

36. SUBSURFACE CONDITIONS

The Contractor shall promptly, and except in an emergency, before such conditions are disturbed, notify the owner in writing of subsurface or latent physical conditions at the site differing materially from those indicated in the Contract Documents; or of physical conditions at the site, either unknown or differing from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents.

37. INDEPENDENT TESTING

The Owner may employ an independent testing laboratory to conduct tests of materials, supplies, machinery, tools, or other equipment supplied by the Contractor when the Owner believes it to be necessary to assure compliance with the Contract Documents. The Contractor shall cooperate with the Owner in facilitating these tests.

38. EXTRA WORK - FORCE ACCOUNT

Any work that is necessary for Completion of the Work that is not described in the Scope of Work (Paragraph 17 of the General Conditions) is Extra Work and shall be paid for in one of the following manners:

A. At a price agreed upon in writing between the Contractor and Owner.

B. In the event of work covered by unit prices, at a price derived from application of unit prices to the quantities necessary to complete the extra work.

C. In the event of work not covered by unit prices, at actual cost plus fifteen percent (15%). If the Extra Work is performed by a previously approved subcontractor, then at actual cost plus fifteen percent (15%) for the subcontractor, and five percent (5%) for the Contractor. Actual cost shall include only the necessary labor (including workmen's compensation, insurance, premiums and payroll taxes), equipment rental (including fuel and lubrication for equipment used in performing the Extra Work), and materials. Equipment rental cost shall be the amount actually paid by the Contractor for rental of the equipment, pro-rated rental rate for the time the equipment was used to perform the Extra Work, or the pro-rated rental rate for the equipment as shown in the latest rate schedule compiled by the Associated Equipment Dealers, whichever is lower. The Engineer shall determine the Contractor's actual cost for performing Extra Work, and the Engineer's determination shall be binding on the Contractor. Under no circumstances shall the Contractor be entitled to any sum of money for performing Extra Work, or for any delays that the Contractor alleges it suffered as a result of performing Extra Work, above actual cost plus 15% (or 15% and 5% when applicable) as outlined above.

Change Orders shall be agreed upon prior to beginning Extra Work. No Change Order shall in any manner or to any extent relieve the Contractor or his Surety of any obligation under the contract. All Change Orders given in accordance with the Agreement are a part of the Agreement and are subject to each and every term or requirement of the Agreement.

The Contractor is responsible for all damages caused by the carelessness or lack of skill of the Contractor, the subcontractors, or employees of the Contractor or subcontractor in doing Extra Work.

39. PROGRESS OF THE WORK

The Contractor shall provide an adequate force of labor and equipment to prosecute the Work to insure the Completion of the Work within the time limit for Completion as set forth in the Agreement.

If required by Owner or Engineer, the Contractor shall furnish a progress schedule to the Owner and Engineer in a form acceptable to the Engineer within ten (10) calendar days after the request is made. The Contractor shall provide all manpower and equipment necessary to meet the progress schedule. In the event periodic estimates indicate that the schedule progress is not being met, the Owner or Engineer may require the Contractor to furnish in writing to the Engineer the method the Contractor proposes to employ to bring the project into compliance with the progress schedule. The Owner may withhold payments if the Work is behind the progress schedule or otherwise not being performed in accordance with the terms of the Contract Documents.

40. TIME OF COMPLETION

Time is of the essence in performing this Contract. The Contractor shall perform and complete the Work in accordance with the Contract Documents before the expiration of the time limit stipulated in the Bid, the Agreement and any extensions of time that are agreed upon pursuant to the procedure for granting extensions of time set forth in the Contract Documents. The amount of time permitted for Completion of the Work contemplates ordinary delays to construction work of a similar character. The Contractor shall not be entitled to an extension of time or additional compensation for ordinary delays in the Completion of the Work or for delays occasioned by inclement weather or accidents. Such delays will not relieve the Contractor from maintaining the rate of progress specified herein or from completing the Work within the stipulated time limit.

If delays are caused by acts of God, acts of government, unavoidable strikes, Extra Work, or other causes or contingencies not enumerated in the preceding paragraph and if they are beyond the control or responsibility of the Contractor, the Contractor may request the Owner to allow additional time to perform and complete the Work. If the Owner determines that the delay is properly excusable, the Owner will, in writing, extend the time for completion of the Work by the amount of time that the Owner believes to be appropriate. The Contractor agrees that such extension of time shall constitute his sole remedy against the Owner for such delays. Contractor shall not

have or assert any claim for, nor shall he be entitled to any additional compensation or damages on account of such delays. If the delay is due solely to the negligence of the Owner, or any of its officers or employees, the Contractor may also request from the Owner an adjustment in the Contract Price for actual costs incurred by the Contractor to perform and complete the Work. The Contractor shall be entitled to an adjustment in Contract Price only for actual costs, as that term is defined in Paragraph 39, in the General Conditions, entitled Extra Work-Force Account. If the owner determines that the delay is of the nature described in this subparagraph and that an adjustment in price is warranted, the owner may, in writing, grant an adjustment in the price for the Work in amount deemed appropriate by the Owner.

Within ten (10) calendar days from the beginning of any delay for which Contractor is entitled to an extension of time or additional compensation, the Contractor shall submit in writing to the Owner, with a copy to the Engineer, its request for adjustment in price or extension of time for the completion of the Work. Any such request shall set forth the cause and particulars of the delay, the details of the delay, and documentation supporting the extension or adjustment requested. The Owner shall review the information and documentation submitted by the Contractor and shall respond to the Contractor

in writing. If the Contractor fails to comply with any requirement of this subparagraph the Contractor shall be precluded from making any claim for an adjustment in the Contract Price or extension of time for Completion of Work due to the delay. In no event shall the Owner's officers, agents or employees have any liability to the Contractor, any subcontractors, or any agents, servants or employees of the Contractor or sub-contractors with respect to or arising out of any actual or alleged delay in the Contractor's performance.

The Owner may delay the beginning of the Work or any part thereof because it has not obtained a necessary property interest in the land on which the Work or some portion of the Work, is to be performed. The Contractor shall have no claim for additional compensation or damages on account of such delay, but shall be entitled to request an extension of time as herein provided.

41. TERMINATION FOR BREACH OF NON-PERFORMANCE

If the Contractor fails to perform the Work promptly and diligently, or if the Contractor breaches the Agreement in any other way, the Owner may:

A. After providing the Contractor with fifteen (15) days written notice, supply any workmen, equipment or materials necessary to

ensure that the work is performed promptly and diligently. The Owner may deduct the cost of supplying additional workmen, equipment or materials from payments due to the Contractor;

B. Terminate the Agreement, enter upon the premises, take possession of all equipment, materials or appurtenances, and employ any person or persons to finish the Work.

In case of termination of the Agreement by the Owner pursuant to this paragraph, the Contractor shall not be entitled to receive any further payment from the Owner until Completion of the Work has occurred. After completion of the Work, the Owner shall pay to the Contractor the amount of the unpaid balance due to the Contractor at the time the Agreement was terminated minus the cost incurred by the Owner to complete the Work. If the cost incurred by the Owner to complete the Work exceeds the unpaid balance due to the Contractor, the Contractor shall be due no money from the Owner and, instead, the Contractor shall pay to the Owner the difference between the unpaid balance due and the Owner's cost to complete the Work.

The cost incurred by the Owner to complete the Work shall be audited by the Engineer. The Engineer's certification of the Owner's cost shall be binding upon the Contractor.

42. WAIVER OF ONE BREACH NOT WAIVER OF OTHERS

No waiver by the Owner or its agents or employees of any breach of this Agreement by the Contractor shall be construed as a waiver of any other or subsequent breach of the Agreement by the Contractor. All remedies provided by this Agreement are cumulative, and in addition to each and every other remedy under the law.

43. LIQUIDATED DAMAGES

The rate of progress, and the time for completion of the Work are essential conditions of the Agreement. The Work shall be prosecuted regularly, diligently and without interruption at a rate that will ensure Completion of the Work in the time specified in the Contract Documents.

Time is of the essence of this Agreement.

If the Contractor fails to accomplish Substantial Completion of the Work in accordance with the Contract Documents within the time stated in the Agreement or in any progress schedule or within any time as extended in writing by the Owner, the Contractor shall pay to the Owner the sum of $_____ for each and every calendar day after the date agreed upon by the parties for Substantial Completion has passed until Substantial Completion of the Work is accomplished.

If the Contractor fails to accomplish Final Completion of the Work in accordance with the Contract Documents within the time stated in the Agreement or in any progress schedule or within any time as extended in writing by the Owner, the Contractor shall pay to the Owner the sum of $_____ for each and every calendar day after the date agreed upon by the parties for Final Completion has passed until Final Completion of the Work is accomplished.

The above sums are agreed upon by the parties as the liquidated damages, and not a penalty, that the Owner will suffer by reason of the delay by the Contractor in accomplishing Completion of the Work, resulting in the inability of the Owner to use the improvements at the time agreed upon the parties for Completion. The Owner may deduct and retain liquidated damages out of any monies which may be due, or become due, to the Contractor.

44. SHOP DRAWINGS

Contractor shall submit to the Engineer for its approval detailed Shop or Working Drawings ("Shop Drawings") when required to do so by the Engineer for the construction of any part of the Work. Any work done or materials ordered by the Contractor before the Engineer has approved the Shop Drawings relating to the Work or material shall be at the risk of the Contractor.

The Contractor shall bear the cost of preparing all Shop Drawings and blueprints. The Contractor shall supply three (3) copies of all Shop Drawings and blueprints to the Engineer.

All certifications, Shop Drawings and Working Drawings shall include for each product, the manufacturer's name, the type of product, the location of the manufacturer's plant, and the project name and number.

The Contractor shall furnish the Engineer with all blue prints, copies of Shop Drawings and material certifications that are required by the Engineer for approval. Upon Completion of the Work, the Contractor shall submit the original tracings to the Engineer, if the Engineer so requires.

The purpose of Shop Drawings is to demonstrate to the Engineer that the Contractor understands the design concept of the Work by indicating which equipment and material it intends to furnish and install and by detailing the fabrication and installation methods it intends to use. The Engineer's approval of Shop Drawings relates to the general concept and not the detail of the Work, and the Engineer's approval will not relieve the Contractor from responsibility for errors or omissions in dimensions or quantities. Approved Shop Drawings are not Change Orders.

The Contractor shall also submit to the Engineer and Inspector Shop Drawings for operation manuals for machinery and equipment installed by the Contractor in Pump Stations, Tanks, Pressure Reducing Vaults, Treatment Plants and when otherwise required by the Engineer. These Shop Drawings shall be provided to the Engineer at the earliest possible time and in no case less than 48 hours before the Contractor begins to perform the Work, in order to avoid any unnecessary delays in beginning the Work.

If approved Shop Drawings deviate from or conflict with the Contract Documents, the Contractor shall comply with the Contract Documents.

45. CUT SHEETS

When required by the Owner, the Contractor shall submit three copies of construction "cut-sheets" to the Owner's Department of Utilities prior to beginning the Work. "Cut-sheets" shall show the centerline, the offset hub elevations and the amount of cut to be made by the Contractor before it installs the improvements. Cut sheets are required on all gravity and force main wastewater projects, on water line projects where the final grade on future roads and paved areas cannot be determined, and on projects where lines are installed in easements. Cut sheets shall be prepared by a qualified engineer or surveyor. Cut sheets shall contain the following information:

A. Temporary bench marks at each manhole.

B. The location of each downgrade manhole, beginning with station 0+00 and identifying adequately the station of each service connection.

C. Elevations of centerline cuts every 25 feet when the Owner is paying all or some portion of the cost of the project.

D. Centerline elevations every 50 feet and at every valve box and manhole location for water line projects and for force main projects.

46. FINAL INSPECTION

Before Final Inspection of the Work, the Contractor shall clean up the site of the Work including all rights-of-way, and shall leave the site in a clean, neat and sanitary condition. Contractor shall remove all machinery, tools, surplus material, temporary buildings, and other structures from the site of the Work.

When the Work is complete and the area cleaned up, the Contractor shall request a Final Inspection of the Work by the Engineer and Owner. After the Final Inspection, the Engineer shall prepare a Punch List. After the Contractor has completed all Work on the Punch List, and the project is ready for Final Acceptance by the Owner, the Contractor shall request in writing an inspection for Final Acceptance of the Work by the Engineer and Owner.

47. USE OF WORK

Whenever in the opinion of the Engineer or Inspector any portion of the Work is completed or in acceptable condition for use, it may be used by the Owner for the purpose intended. However, such use by the Owner does not constitute acceptance of any portion of the Work, or a waiver of any of the provisions of the Contract Documents.

48. PAYMENT

If the Contractor performs properly all of the obligations of the Contract Documents, the owner shall pay the Contractor for the performance of the Work in the manner and within the time specified in the Contract Documents. The Owner also agrees to pay the Contractor for Extra Work in accordance with the terms of the Contract Documents. The Contractor shall make requests for payment by submitting the original and four (4) copies of the monthly estimate for partial payment to the Owner on a form acceptable to the Owner, as set forth in Paragraph 51 of the General Conditions, entitled Monthly Estimates.

49. SALES AND USE TAXES

The Owner shall make no payment to the Contractor for sales or use tax that is not included in the Contract Price at the time the Agreement is executed by the Owner.

50. MONTHLY ESTIMATES AND RETAINAGE

On the 20th day of each month or at any other regular time agreed upon by the Owner and Contractor, the Contractor and the Inspector shall prepare and submit to the Owner a monthly estimate for Partial Payment. The monthly estimate shall cover items of work for which the Contractor is entitled to be paid since the last previous monthly estimate was submitted, including (1) the value of the Work done, (2) major items of equipment or materials delivered to the site of the project to be installed by the Contractor, as substantiated by submitted invoices and as approved by the inspector, and (3) materials incorporated into the Work.

The Owner shall pay to the Contractor all sums due under the monthly estimate less five percent (5%) retainage within 30 days after of the approved monthly estimate by the owner, unless the Owner asserts a right to withhold some or all of the payment under the provisions of the Contract Documents.

The Contractor will be paid for materials delivered to and stored on the job site. Payment will be for actual cost of materials as evidenced by receipted invoices, less five percent (5%) retainage. The Contractor shall make a separate accounting of these materials and shall submit an accounting of them, with four (4) copies, along with the monthly estimate for partial payment.

51. PARTIAL PAYMENT NO WAIVER OF RIGHTS

Partial payments made under this Agreement by the Owner are not evidence of the proper performance of the Agreement by the Contractor either in whole or in part, and no payment made by the Owner shall be construed to be an acceptance of defective or improper work. No act of the Owner or the Engineer, or the representative of either of them, in superintending or directing the Work, no failure to disapprove or reject any material used in the Work, and no extension of time for the Completion of the Work shall be construed as acceptance of the Work either in whole or in part. Acceptance of the Work by the Owner shall occur only upon Final Payment by the Owner.

Before Final Payment is made, the Contractor shall sign and attest to a statement accepting the Final Payment in full satisfaction and settlement of all claims on account of the Work done and materials furnished under the Agreement, and certifying that all claims of others against the Contractor for material provided or labor performed have been paid and satisfied in full.

52. FINAL PAYMENT

After receiving satisfactory evidence from the Contractor that all labor and material bills have been paid and as soon as practicable after the completion of the Work, the Inspector shall prepare a final estimate of the amount of the Work, and the value thereof, and the Owner shall, within 30 days after such final estimate is made, pay to the Contractor the entire sum due after deducting therefrom all previous payments, and all deductions to be retained by the Owner under any of the provisions of the Contract Documents. All prior estimates and payments shall be subject to correction in the final estimate of payment.

53. STANDARDS FOR COMPUTING PAY ITEMS

A. ROCK AND HARDPAN - The depth of main line trenches, service trenches and force main trenches shall be computed using the actual depth of the rock to the invert of the pipe plus six inches (6"); and the actual length plus a width of thirty-six inches (36") for pipe twelve inches (12") and less in nominal diameter. For pipe between twelve inches (12") in nominal diameter and 36" in nominal diameter, the trench width shall be the outside diameter of the pipe barrel plus twenty-four inches (24") and trench depth shall be based on the depth of rock to the outside barrel of the pipe plus six inches (6").

For pipe thirty-six inches (36") or greater in nominal diameter, the trench width shall be the outside diameter plus thirty-six inches (36") and trench depth shall be the depth of rock to the outside barrel of the pipe plus six inches (6") . Manhole and structure excavation, including the base, shall be at the depth encountered, plus six inches (6"). The horizontal dimensions shall assume a square extending one foot beyond the exterior walls of the structure when forming is not required and two feet when forming is required. No additional payment for rock excavation in trench will be allowed for this assumption.

B. EARTH - When payment is to be computed on a volumetric basis, the width and depth of main line trenches, force main trenches and service trenches shall be computed in the same manner as for Rock and Hardpan except that the depth shall be the bottom of the pipe for force mains, and the invert of the pipe for gravity lines. When excavation payments are computed based on depth or on cut increments, measurements shall be from the ground surface of the center line of the trench to the invert of the pipe line.

C. BEDDING IN ROCK, HARDPAN OR EARTH - The cost of bedding that is required for pipe that is laid in rock or hardpan or earth shall be included in the unit price for these items and no extra compensation shall be allowed.

D. CLEARING AND GRUBBING - The cost of clearing and grubbing shall include removal of all trees, stumps and other vegetation. No extra compensation shall be allowed for removing or disposing of trees, stumps and other vegetation.

E. FURNISH, INSTALL, EXCAVATE AND BACKFILL FOR (EACH SIZE) PIPE OR APPURTENANCE - Price per linear foot of water and/or sewer line and price per each appurtenance for material as specified shall include furnishing, installing, excavating, backfilling, and testing the pipe and appurtenance at the depth indicated and no extra compensation shall be allowed for any of these items.

Bedding that is required for pipe and appurtenances shall be included in price per linear foot or per each appurtenance where applicable for excavation and backfill and no extra compensation shall be allowed. Depth for payment shall be measured to the invert of the pipe.

F. FURNISH, INSTALL, EXCAVATE AND BACKFILL FOR SEWER SERVICE CONNECTION -Price per linear foot of service connection pipe installed shall include an approved plug and marker at the upper end of the service line. The pay length of the connection shall be the horizontal distance from the center line of the main sewer to the upper end of service line. Price per service tee shall be as installed, complete in place. No extra compensation shall be allowed for any of these items.

G. HAND EXCAVATION - Price per cubic yard for hand excavation shall be allowed only when specifically authorized, in writing, by the Engineer. Hand excavation shall be classified as excavation with hand tools rather than with excavating machines. Hand excavation will be permitted only when the Engineer believes that it is necessary and will normally be limited to the amount required to protect trees, utility poles or structures that would otherwise be removed during the course of machine excavation. No allowance shall be made for hand excavation performed to locate or protect culverts and underground utilities.

H. REMOVAL OF UNSTABLE SOIL AND REPLACEMENT WITH SELECT MATERIAL - Price per cubic yard of select material shall be allowed only when the Engineer directs, in writing, that select material shall be provided. The price for providing select material shall include the cost of removing unsuitable material and replacing it with select material in order to allow for a stable foundation below the pipe line and for the cost of providing select material because the excavated material is unsuitable for proper backfilling of the trench. The cost of transporting surplus excavation from other portions of the project will be compensated only when the haul distance exceeds one thousand feet. Payment for the cost of select material required when pipe is laid in rock or hardpan and for backfill because of the inability to use rock or hardpan from the trench shall be included in the price bid to Furnish, Install, Excavate and Backfill (Each Size) Pipe. No extra compensation shall be allowed for Removal of Unstable Soil and Replacement with Select Material.

I. STANDARD MANHOLES - Price shall be determined per vertical foot of standard manhole. The depth shall be the actual depth to the invert of the utility line plus 8" concrete base. No extra payment shall be allowed for bedding when rock excavation is encountered. Price shall include steps, frame and covers.

J. WATERTIGHT MANHOLES - Price shall be determined per vertical foot of watertight manhole. The depth shall be the actual depth to the invert of the sewer line plus 8" concrete base. No extra payment shall be allowed for bedding when rock excavation is encountered. Price shall include steps, frame and watertight covers.

K. DROP CONNECTIONS - Price shall be determined per vertical foot for each drop connection constructed. The depth shall be the dimension shown in Standard Details.

L. SEEDING -

1) WOODED AREAS - Price shall be determined per linear foot of easement including furnishing and spreading seed as required by the specifications.

2) LAWN KEPT AREAS - Price shall be determined per linear foot of easement including topsoil, seeding, mulch, fertilizer, lime, etc.

M. STRAW BALES FOR EROSION CONTROL - Price shall be determined per bale for furnishing, installing and maintaining.

N. SHEETING AND SHORING ORDERED LEFT IN PLACE - Price shall be determined per one thousand board feet for furnishing and installing sheeting and shoring ordered left in place, including cutting and bracing. The Contractor shall not be compensated for the cost of placing and removing sheeting or bracing not ordered left in place.

O. MANHOLE AIR VENT - Price for each ductile iron manhole air vent shall include pipe, fittings, connection to manhole, excavation and backfill and all necessary appurtenances.

P. CLASS "B" CONCRETE - Price shall be determined per cubic yard of concrete used to perform the Work. Price shall include all required excavation, forming and finishing.

Q. STONE FOR ROAD SHOULDERS - Price shall be determined per linear foot of pipe line trench, surfaced with approved crusher run stone. Stone shall be placed to a depth of 4 inches, or the same depth as existed prior to construction, whichever is greater.

R. ASPHALT OVERLAY - Price shall be determined per square yard for placing asphalt over entire roadway per VDOT standards.

S. PLACING ASPHALT IN TRENCH - Price shall be determined per linear foot of pipe line trench for replacement of base material.

T. **RIP RAP** - Price shall be determined per linear foot as measured along center line of the stream that is crossed. Price shall include furnishing and installing rip rap as required by the Contract Documents.

U. **LOCATE AND MAKE CONNECTION TO EXISTING MANHOLE** - Lump Sum Price shall include all work necessary for making connection to existing manhole and establishing a new flow channel.

V. **LOCATE AND MAKE CONNECTION TO EXISTING LINE** - Lump Sum Price shall include all work necessary for making connection to existing water lines; including fittings and removing abandoned pipe; and for sewer projects, establishing a new flow channel, etc.

W. **CASING PIPE - BORE OR TUNNEL** - Price shall be determined per linear foot for furnishing and installing casing pipe by boring or tunnelling, threading carrier pipe, blocking, sealing ends, pits and all other work that is required to complete the installation.

X. **CASING PIPE -** OPEN TRENCH - Price shall be determined per linear foot for furnishing and installing casing pipe in an open trench, threading carrier pipe, blocking, sealing ends, pits and all other work that is required to complete the installation. Price shall include excavation and backfill.

Y. **MOBILIZATION** - Lump sum price shall include all work necessary to mobilize, demobilize and remobilize as necessary to perform work in accordance with the project plans and specifications.

54. RIGHT TO AUDIT PROVISION

Contractor's records, which shall include but not be limited to accounting records, written policies and procedures, subcontract files (including proposals of successful and unsuccessful bidders), original estimates, estimating worksheets, correspondence, change order files (including documentation covering negotiated settlements), and any other supporting evidence necessary to substantiate charges related to the Agreement (all the foregoing hereinafter referred to as "records") shall be open to inspection and subject to audit and/or reproduction, during normal working hours, by Owner's agent or its authorized representative to the extent necessary to adequately permit evaluation and verification of any invoices, payments or claims submitted by the Contractor or any of his payees pursuant to the Contract Documents. The records subject to examination shall also include, but not be limited to, those records necessary to evaluate and verify direct and indirect costs (including overhead allocations) as they may apply to costs associated with the Agreement.

For the purpose of such audits, inspections, examinations and evaluations, the Owner's agent or authorized representative shall have access to the records from the effective date of the Agreement, for the duration of the Work, and until two (2) years after the date of Final Payment by Owner to Contractor pursuant to the Contract Documents.

Owner's agent or its authorized representative shall have access to the Contractor's facilities, shall have access to all necessary records, and shall be provided adequate and appropriate work space, in order to conduct audits in compliance with this article. Owner's agent or its authorized representative shall give Contractor reasonable advance notice of intended audits.

Contractor shall require all subcontractors, insurance agents, and materials suppliers (collectively referred to as "payees") to comply with the provisions of this article by insertion of the requirements hereof in a written contract agreement between Contractor and payee. Failure to obtain such written contracts which include such provisions shall be reason to exclude some or all of the related payees' costs from amounts payable to the Contractor pursuant to the Agreement.

If an audit inspection or examination performed pursuant to this paragraph, discloses overcharges of any nature by the Contractor to the Owner in excess of five percent (50) of the total billings made by the Contractors pursuant to the Contract Documents, the actual cost of the Owner's audit shall be paid by the Contractor.

55. WARRANTY PERIOD

The Contractor guarantees the quality and workmanship of the Work beginning on the date of Final Acceptance. The Warranty Period shall be one year, except that the Warranty Period for road work shall be three years or the period established by the Virginia Department of Transportation's latest requirements, whichever is longer.

56. NOTIFICATION TO PROPERTY OWNERS

Contractor shall properly notify all property owners two (2)weeks prior to the start of any construction (including land clearing). Notification shall be in the form of a letter similar to the "sample" reflected in the County's latest Water and Sewer Specifications. (See sample "NOTIFICATION" letter - Page NOT-1).

57. DRUG FREE WORKPLACE

During the performance of this contract, the contractor agrees to:

A. Provide a drug-free workplace for the contractor's employees

B. Post in conspicuous places, available to employees and applicants for employment, a statement notifying employees that the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana is prohibited in the contractor's workplace and specifying the actions that will be taken against employees for violations of such prohibition.

C. State in all solicitations or advertisements for employees placed by or on behalf of the contractor that the contractor maintains a drug-free workplace.

D. Include the provisions of the foregoing clauses in every subcontract or purchase order over $10,000, so that the provisions will be binding upon each subcontractor or vendor.

For the purposes of this section, "drug-free workplace" means as site for the performance of work done in connection with a specific contract awarded to a contractor in accordance with this chapter, the employees of whom are prohibited from engaging in the unlawful manufacture, sale, distribution, dispensation, possession or use of any controlled substance or marijuana during the performance of the contract.

58. AWARD NOTIFICATION

For information pertaining to the award of this procurement transaction, bidders may access public notification electronically at www.co.chesterfield.va.us/ManagementServices/Purchasing/purchase.asp

59. UNBALANCED BIDS

The County reserves the right to negotiate unbalanced unit prices with the lowest bidder prior to award and to award to the next low bidder if a reasonable fee is not achieved.

60. ENVIRONMENTAL MANAGEMENT

Vendor/Supplier/Contractor will be responsible for complying with Section 8 and all federal, state and local environmental regulations relating to transportation, handling, storage, spillage and any other aspect of providing the services specified herein, as applicable.

61. FAITH-BASED ORGANIZATIONS

Chesterfield County does not discriminate against faith-based organizations in accordance with the Code of Virginia, Section 2.2-4343.1.

62. WATER LINE TIE-INS

All water line tie-ins to the existing distribution system including vertical and horizontal relocations shall be coordinated with the Operations and Maintenance Section of the Utilities Department. Tie-ins shall be scheduled Monday thru Thursday from 9:00 a.m. to 4:00 p.m. Tie-ins may be required outside of this time and/or during nighttime hours.

The County reserves the right to require the Contractor to perform tie-ins outside of the normal working hours detailed above in the interest of public safety or customer service. No claim for additional compensation shall be made by the Contractor when such occasions occur.

Proper preparation including field verification of the plans shall be accomplished to minimize shutdown time and prevent the tie-in from exceeding scheduled shutdown time. Sufficient personnel, equipment and materials shall be on site prior to the water being shut off. Where applicable, excavation and preassembling of fittings shall be performed. If, in the opinion of the inspector, sufficient resources are not available, the tie-in will be cancelled and rescheduled.

Tie-ins to asbestos cement pipe shall be made to rough barrel pipe. Tie-ins to the machined section of asbestos pipe will not be permitted. Where asbestos cement pipe couplings have been removed, the machined end of the pipe shall be removed. Abandonment of cement asbestos pipe shall be per state and federal requirements.

Tie-ins involving fittings shall include provisions for temporary blocking until concrete blocking has cured.

All pipe and fittings used for a tie-in are to be swabbed with a 1% chlorine solution prior to connection.

63. PROCEDURES FOR CLAIMS AND DISPUTES

A claim is a demand or assertion by the Contractor seeking, as a matter of right, adjustment or interpretation of Contract terms, payment of money, extension of time or other relief with respect to the terms of the Contract. Claims must be initiated by written notice. The responsibility to substantiate claims shall rest with the Contractor.

Claims by the Contractor must be initiated within 21 days after occurrence of the event giving rise to such claim or within 21 days after the claimant first recognizes the condition giving rise to the claim, whichever is later. Claims must be initiated by written note to the Architect or Engineer and Owner. Submittal of a claim by the Contractor within the time limits prescribed by this paragraph shall be required as a condition precedent to the institution of litigation by the Contractor with respect to the subject matter of that claim.

The pit shall be filled with coarse gravel or #57 clean stone, mixed with coarse sand, to a level of 6 inches above the weep hole. No hydrant drainage pit shall be connected to a sewer. The bowls of all hydrants shall be well braced against unexcavated earth with suitable concrete backing, and when directed shall be restrained to the pipe with approved harnessing. All hydrants shall be thoroughly cleaned of dirt or foreign matter before setting.

6. Anchorage of Fittings: As required in Part V, Section 4 of this document, all fittings i.e., each bend, tee, plug, valve and cap shall be prevented from moving by means of adequate thrust reaction blocking or mechanical restraints; or both.

7. In easements and undeveloped wooded areas, plastic markers shall be installed every 200 feet, and at all valves and fittings. Markers shall be as manufactured by Carsonite or approved equal. Exceptions are where water lines are installed in "kept" yards where the property owners may object to the placement of these markers. Contractors will be required to properly install the markers per manufacturer's recommendations, parallel to the water line facing roadway, or as additionally directed by the County.

D. Installation of Fabricated Steel Tapping Sleeves:

1. General: Rigorous testing and conditions relating to tapping sleeves, applied to all manufacturers, will become our standard operating procedure. These conditions are as follows:

   a. The tapping sleeve shall be tested in place to a minimum of 200 psi, for a minimum of 10 minutes with no loss of pressure.

   b. If the sleeve fails the 200 psi pressure test, the original failed sleeve shall be replaced with an entirely new sleeve.

   c. Tapping sleeves 16" and above shall be supported by a concrete pedestal support, as shown in the County's "Standard Details" Section.

2. Installation: In addition to the conditions outlined in Section 1 above, the following procedures must be adhered to be followed by the contractor:

   a. Clean pipe surface thoroughly, particularly in the area where the gasket will seal. The contractor shall wipe the pipe in the area where the tap is to be made with a 1% chlorine solution prior to installing the sleeve.

b. Lubricate pipe and gasket with soap and water or gasket lubricating solution. Do not use grease or pipe lubricant.

Under no condition should any antifreeze be used.

c. Mount body halves on pipe. Contractor shall ensure gasket is secure in gasket grove.

Contractor shall ensure that the tapping nipple is pointing in its final direction so it will not be moved or rotated on the pipe. This half of the sleeve can be blocked in some fashion so the back half of the sleeve and bolts can be installed without having to have several people involved in attaching the sleeve.

d. Insert bolts and hand tighten nuts, keeping equal gaps between body halves.

e. Prior to tightening nuts, position outlet as required to suit the installation. Contractor should ensure test connection is accessible.

f. Tighten bolts, alternating from one side to the other to equalize the gap between halves. Continue to tighten bolts until sleeve halves conform to the contour of the pipe and all bolts are to a uniform tightness. Torque bolts per manufacturer's recommendations. On thin wall or badly corroded pipe care should be taken to prevent crushing or collapsing of the pipe.

g. A pressure test is required prior to tapping to test the sleeve and valve in place.

Prior to pressure testing, the inspector shall obtain a reading of line pressure in the system, either from a hydrant or a service. The pressure test should be at 2 ½ times line pressure or 200 psi, whichever is greater. The duration of this pressure test shall be a minimum of ten minutes. If the sleeve fails the pressure test, it shall be completely removed and returned and a new sleeve used. The tapping sleeve, valve and tapping machine assembly is to be adequately supported furring the tapping operation to prevent movement or rotation of the tapping sleeve.

h. Proceed with tapping operation.

Contractor shall complete tapping procedures and do necessary checking as required. Contractor shall furnish the inspector with the coupon.

ADDENDUM

JULY 28, 2005

CHANGES TO PART IV

F. The Contractor is reminded that prior to the installation of water mains, the design engineer must certify in writing that:

1) All pavement and shoulder areas within the right-of-way are graded to within 6" of subgrade.

2) All ditches and slopes to 1 foot outside the right-of-way have been graded to final grade.

3) Markers for the sewer laterals are visible.

4) All necessary property pins have been installed.

G. It shall be the responsibility of the Developer or his agent to acquire offsite easements necessary for water or sewer installation. Developer shall adhere to any agreements negotiated with the landowner regarding restoration of the easement.

H. Any work performed outside the boundary of a new subdivision and/or site development shall be considered work which the Developer, Engineer, and/or Contractor must comply with other requirements not covered in Part IV that are applicable such as the following sections:

1) PART III, Section 1 - Site Clearing
2) PART III, Section 2 - Site Demolition
3) PART III, Section 3 - Erosion and Sediment Control
4) PART III, Section 7 - Establishing Vegetation

I. The following specifications cover the construction of developer projects:

Section 1 - Trenching, Backfilling and Compaction
Section 2 - Sanitary Sewer Systems
Section 3 - Water Distribution Systems

These specifications are to be used in conjunction with the County's Standard Details, county's approved materials list and materials specification, and where applicable, any specifications and requirements as set forth in Part III - entitled "County Water and Sewer Projects Construction Specifications".

2. DEFINITIONS:

A. COMPLETION:

Completion of work indicates that all sewer pipe, water pipe,

SECTION 2

SANITARY SEWER SYSTEM

I - GENERAL

1.01 REQUIREMENTS OF REGULATORY AGENCIES

Construction as shown on the plans or stated herein shall be performed in accordance with current and applicable requirements as established by the County of Chesterfield and the Virginia Department of Health or any other agencies having jurisdiction. Where conflicts arise between the Contract Documents and previously mentioned requirements, the more restrictive shall apply. If such requirements require a change in the work as stated herein or shown on the plans, the Contractor shall stop work and notify the County for further direction.

II - PRODUCTS

2.01 APPROVED MATERIALS

All materials shall conform to the County of Chesterfield "Approved Materials and Manufacturers" list. All materials shall be virgin material. The Contractor shall submit a notarized statement from the Supplier and/or Manufacturer to the Inspection Section that all materials being supplied for the work meet AWWA, ASTM and/or County standards, as appropriate. At least three (3) copies for the County's use along with any additional copies needed to be returned to Contractor, Engineer, Suppliers, etc. after approval is made.

In addition, shop drawings, as defined in the General Section, and operation manuals are required [on projects where there are special structures, and on Pump Station, Tank, Pressure Reducing Vault, and Treatment Plant projects to include pipe and accessories, manholes and appurtenances, valves, and other assorted products, etc.] to be submitted by the Utilities Contractor to the Engineering Supervisor in charge of the Inspection Group for approval. The information needs to be sent as far in advance as possible (at least 48 hours) to avoid any unnecessary delays in beginning the project. The appropriate number of copies of shop drawings needed is as defined in the above paragraph.

The shop drawings must include manufacturer's name, type of product, location of plant, project name and number, etc. for each product.

2.02 PIPE BEDDING FOR GRAVITY SANITARY SEWERS

Bedding material to be crushed stone #57 gradation in accordance with VDOT Road and Bridge Specifications, latest edition.

SECTION 3

WATER DISTRIBUTION SYSTEM

I - GENERAL

1.01 REQUIREMENTS OF REGULATORY AGENCIES

Construction as shown on the plans or stated herein shall be performed in accordance with current and applicable requirements as established by the County of Chesterfield and the Virginia Department of Health or any other agencies having jurisdiction. Where conflicts arise between the construction documents and previously mentioned requirements, the more restrictive shall apply. If such requirements require a change in the work as stated herein or shown on the plans, the Contractor shall stop work and notify the County for further direction.

II - PRODUCTS

2.01 APPROVED MATERIALS

All materials shall conform to the County of Chesterfield "Approved Materials and Manufacturers" list. All materials shall be virgin material. The Contractor shall submit a notarized statement from the Supplier and/or Manufacturer to the Inspection Section that all materials being supplied for the work meet AWWA, ASTM and/or County Standards as appropriate. At least three (3) copies for the County's use along with any additional copies needed to be returned to Contractor, Engineer, Suppliers, etc. after approval is made.

In addition, shop drawings, as defined in the General Section, and operation manuals are required [on projects where there are special structures, and on Pump Station, Tank, Pressure Reducing Vault, and Treatment Plant projects to include pipe and accessories, manholes and appurtenances, valves, and other assorted products, etc.] to be submitted by the Utilities Contractor to the Principal Utilities Engineer in charge of the Inspection Group for approval. The information needs to be sent as far in advance as possible (at least 48 hours) to avoid any unnecessary delays in beginning the project. The appropriate number of copies of shop drawings needed is as defined in the above paragraph.

The shop drawings must include manufacturer's name, type of product, location of plant, project name and number, etc. for each product.

III - EXECUTION

3.01 INSTALLATION OF NEW WATER SYSTEMS

A. Excavating and Backfilling:

1. Contractor shall do all excavating of any and all materials encountered in the course of excavating for all underground utility systems. After the pipe is in place, backfill with suitable earth, free from rocks, organic material, etc.

6. Anchorage of Fittings: As required in Part V, Section 4 of this document, all fittings, i.e., each bend, tee, plug, valve and cap shall be prevented from moving by means of adequate thrust reaction blocking or mechanical restraints; or both.

7. In easements and in undeveloped wooded areas, plastic markers shall be installed every 200 feet, and at all valves and fittings. Markers shall be as manufactured by Carsonite or approved equal. Exceptions are where water lines are installed in "kept" yards where the property owners may object to the placement of these markers. Contractors will be required to properly install the markers per manufacturer's recommendations, parallel to the water line facing roadway, or as additionally directed by the County.

D. Installation of Fabricated Steel Tapping Sleeves:

1. General: Rigorous testing and conditions relating to tapping sleeves, applied to all manufacturers, is standard operating procedure. These conditions are as follows:

a. The tapping sleeve shall be tested in place to a minimum of 200 psi, for a minimum of 10 minutes with no loss of pressure.

b. If the sleeve fails the 200 psi pressure test, the original failed sleeve shall be replaced with an entirely new sleeve.

c. Tapping sleeves 16" and above shall be supported by a concrete pedestal support, as shown in the County's "Standard Details" Section.

2. Installation: In addition to the conditions outlined in Section 1 above, the following procedures must be followed by the contractor:

a. Clean pipe surface thoroughly, particularly in the area where the gasket will seal. The contractor shall wipe the pipe in the area where the tap is to be made with a 1% chlorine solution prior to installing the sleeve.

b. Lubricate pipe and gasket with soap and water, or gasket lubricating solution. Do not use grease or pipe lubricant.

<u>Under no condition should any antifreeze be used</u>.

c. Mount body halves on pipe. Contractor shall ensure gasket is secure in gasket groove.

Contractor shall ensure that the tapping nipple is pointing in its final direction so it will not be moved or rotated on the pipe. This half of the sleeve can be blocked in some fashion so the back half of the sleeve and bolts can be installed without having to have several people involved in attaching the sleeve.

d. Insert bolts and hand tighten nuts, keeping equal gaps between body halves.

e. Prior to tightening nuts, position outlet as required to suit the installation. Contractor shall ensure test connection is accessible.

f. Tighten bolts, alternating from one side to the other to equalize the gap between halves. Continue to tighten bolts until sleeve halves conform to the contour of the pipe and all bolts are to a uniform tightness. Torque bolts per manufacturer's recommendation. On thin wall or badly corroded pipe care should be taken to prevent crushing or collapsing of the pipe.

g. A pressure test is required prior to tapping to test the sleeve and valve in place.

Prior to pressure testing, the inspector shall obtain a reading of line pressure in the system, either from a hydrant or a service. The pressure test should be at 2½ times line pressure or 200 psi, whichever is greater. The duration of this pressure test shall be a minimum of ten minutes. If the sleeve fails the pressure test it shall be completely removed and returned and a new sleeve used. The tapping sleeve, valve and tapping machine assembly is to be adequately supported during the tapping operation to prevent movement or rotation of the tapping sleeve.

h. Proceed with tapping operation.

Contractor shall complete tapping procedure and perform the necessary checking as required. Contractor shall furnish the inspector with the coupon.

i. Check the bolts for tightness and retorque if required.

ADDENDUM

JULY 28, 2005

CHANGES TO PART V

PART V

APPROVED MATERIALS AND MANUFACTURERS LIST
AND
MATERIAL SPECIFICATIONS
CHESTEFIELD COUNTY, VIRGINIA

***INSTRUCTIONS* for viewing and/or printing this document:**
Click on **PART V** above to view or print this portion of the specifications. Each section has been set up with bookmarks making it more convenient to locate various topics within the document. After pulling up the section you wish to view or print, click on "BOOKMARKS" in the left hand margin of the document. (When printing the document, please remember to print this table of contents and include it in your book.)

TABLE OF CONTENTS

Revisions to this publication will be made periodically. Users should inquire with the Utilities Department's Development Section as to availability. Questions concerning the information contained in the listings should be referred to the Product and Design Review Committee. Any errors or omissions should be reported to the committee immediately. Utilities Department will not allow the use of products and materials identified incorrectly in this publication.

Further details regarding submittal of shop drawings, etc. can be found in Part III and Part IV of this document.

h. American R/D – Series 2000 (Resilient Wedge)

2. Butterfly Valves (For Use on 16″ and Larger Lines)

a. Mueller - Lineseal III

b. DeZurik Baw AWWA

c. Pratt's Groundhog Class 150B and Triton HP-250

d. M&H Style 4500 (for 16″-24″)
and Style 1450 (for 30″-54″)

e. Mosser Series 810 & 830

f. Rodney Hunt Streamseal (24″ and Larger)

g. K-Flo 47 Series (30″-72″)

C. Fire Hydrants

1. Mueller Centurion A-421

2. Kennedy “K81D” (Dual rotated hydrant)

3. M & H Style 929 Reliant

4. U.S. Pipe - Metropolitan 250 (Model 94)

5. Clow Medallion

6. American Darling - Mark 73-2

D. Meter (Setters) Yokes

1. For 5/8″ Meters:

5/8″ x 7″ Riser Meter Yoke with one lockwing ball or plug type, full port angle meter stop, with saddle nuts, ¾″ copper tube flare or compression connection inlet and outlet.

a. Ford

1) V71-7W-22-33 (plug type angle stop with copper flare connections inlet and outlet)
2) V71-7W-44-33G (plug type angle stop with compression connections inlet and outlet for copper pipe)

4.	Cambridge Brass 1½″	202-H6H6	202-F6F6
	Cambridge Brass 2″	202-H7H7	202-F7F7

F. Vaults, Precast Concrete - Requirements and configurations as shown on plans. (For other approved vaults, see "Water Meter Boxes" under Section 1).

1. Americast

2. Elite Fire Protection, Inc.

3. Tindall Vaults

4. Clear Flow Company

5. M&B (Model MB1500BF/WM with only the Ames 2000 series backflow device and Fire Protection Check Valve – Fig. 590F as manufactured by Grooved Sprinkler Company).

6. Bartow

G. Tapping Sleeve - Sleeves must conform to County's latest application instructions as specified in Section 4 entitled Materials Specifications.

1. **(Fabricated Steel Sleeves)** with Epoxy Coating and Stainless Steel Bolts and Nuts

   a. Smith Blair (Rockwell Product) #622 (4″-30″)
   b. J.C.M. Industries #412 ESS (4″-48″)
   c. ROMAC # FTS 420 SS (4″-30″)
   d. Ford FTSC (4″-30″) w/SS bolts

2. **(Stainless Steel Sleeves)**

   a. Power Seal - Model 3480 AS and 3480 MJ (6″-24″)
      Model 3490 AS and 3490 MJ (6″-24″)
   b. ROMAC SST and SST III (6″-24″)
   c. Ford FAST (6″-24″)
   d. Cascade - Model CST-EX (4″- larger)
      Model CST-SL (4″-24″)
   e. JCM Model 432 (6″-24″)
   f. Mueller H304 (6″-24″)
   g. Dresser Style 630 (6″ – 12″)
   h. Smith-Blair Models 662 & 663 (4″-20″)
   i. Smith-Blair Model 622 MJ (4″-20″)
   j. Mueller H300 (Not to be used on Asbestos Cement and Cast Iron Pipe)

3. **(M.J. Steel Sleeve)**

   a. JCM 414 Mechanical Joint

4. **(M.J. Cast/Ductile Iron Sleeve)**

   a. Mueller (H-615 for 4″-24″ on Ductile Pipe and H-619 for 4″-12″ C/A Pipe)

   b. Clow (F-5205)

   c. American Flow Control - (Model 2800-A for A/C pipe; Model 2800-C for 4″-12″ D.I. and PVC pipes; Model 1004 for PVC pipe and 16" and larger D.I. pipe)

   d. U. S. Pipe D.I. T-9 MJ Sleeve

H. Resilient Seated Wedge Tapping Valves

1. American Flow Series 500 Resilient Wedge Valve (for 6″-12″ only)

2. Mueller T-2360 Resilient Wedge Valve (for 6″-12″ only)

3. American Flow Control - Series 2500 (for 16″-30″ only)

4. Kennedy Model #4950 (for 4″ and 24″ only)

5. Clow Model F6114 (for 16″ and 20″ only)

6. American R/D – Series 2000 (Resilient Wedge)

I. Fittings (Bends, Crosses, Tees and Grade Lok Offset Glands) Ductile Iron only

1. D.I. Compact AWWA C153 or D.I./C.I. AWWA C110

2. D.I. Special Coated Compact Fittings AWWA 153

Couplings (For pipe sizes 12″ and smaller)

1. Cast Couplings (transition or straight)

   a. Romac 501 series (long sleeve coupling)

   b. Ford #FC2A (long sleeve coupling)

   c. Smith Blair (Rockwell) #442 (long sleeve coupling)

d. Power Seal Model # 3501 (long barrel coupling)

e. Maxi Fit (long sleeve coupling)

f. Ford FC2W (Wide Range)

2. Cast D.I. Couplings

a. FEHR

J. Air Release or Combination Air Release and Vacuum Valves
(Engineer is responsible for specifying the appropriate type for its designated use)

1. Clow 5401-E (for 2″ inlet with small orfice)

2. Clow 5402-A (for 1″ inlet and 1″ orfice)

3. APCO (Product Bulletin No. 600 and/or 601)

4. G. A. Industries Type 1 GH4-150 Type 4 GH 7-K

5. Valmatic

6. Cla Val (Models 34, 35 & 36)

K. Blow Off Valves

1. 2″ Bronze Gate Valve
(open to most manufacturers, i.e., Grinell, Epsco, etc.)

L. Line Stopping Valves

1. Hydra-Stop

M. Water Meter Boxes/Vaults

1. Precast Concrete Box:

a. Lyttle Service Co. LLC T/A Stamie E. Lyttle Co., Inc. (used with 1″, 1½″ or 2″ water meters and assemblies)
b. Clear Flow Model CFLD6060 (for 3″ and 4″ water meters and assemblies)
c. M&B – Model #MB1500BF/WM (for 3″ and 4″ water meters and assemblies)
d. Bartow Precast Vaults (for 3″ and larger water meters and assemblies)

Febco	6C-M	3″ - 10″
	FRPII	¾″ - 1½″
	825 D & YD	3″ - 10″
	860	2½″ - 8″
	880 (V)	2½″ - 10″
Hershey Products, Inc.	6	4″ - 10″
	6C	4″ - 10″
Watts Regulator Co.	900	3″ - 6″
	909	3″ - 10″
	009RP	3″
Zurn Industries, Inc. (Wilkins)	375	2½″ - 6″
	375DA	4″ - 6″
	475	4″ - 6″
	475V	4″ - 6″
	975	2½″ - 10″
	975DA	2½″ - 10″

V. Casing Spacers

1. Cascade
2. Advance — Model SSI
3. PSI — Model No. C8G-2 Model No. C12G-2
4. Power Seal — Model No. 4810
5. BWM — Model BWM-SS
6. CCI — Model CSS

W. Lubricants

1. Blue Lube
2. Slikstyx (new product formulation only)

X. Water Sampling Stations

1. GIL # EH101

Y. Valve Key Extensions

1. Chesterfield Model (See Detail in Part II of this manual)

2. For D.I. Pipe (Slip Joint Plug)

   a. Griffin Pipe Products

   b. Tyler

   c. Union Foundry

   d. Harrington Corporation (HARCO)

   e. Standard International

   f. Trinity Valley

   g. American Cast Iron

   h. U. S. Pipe and Foundry

   i. Cherne

J. Valves

1. Sewage Air/Vacuum Release Valves

   a. Vent-O-Mat Series RGX or RGS_b – "Anti-Surge"
      (Note: Engineer must design project using the appropriate valve.)

   b. A.R.I. Combination Air Valve – Model D-020 and D-025

2. Plug Valves

   a. DeZurik Series 100 [Figure 118] -
      (Non-Lubricated Eccentric)

   b. Val-Matic Series 5900 or 5800 Cam-Centric

   c. Milliken - Millcentric (Eccentric Plug Valve)

   d. Homestead Eccentric Plug Valve - Series 120

   e. Clow Eccentric Plug Valve (3"-24")

K. Manhole Adjusting Rings

1. Concrete Reinforced

2. LadTech H.D.P.E.

L. Casing Spacers

1. Same as under “Section 1: Water System”

5. American Flow Control, (205) 325-7856
(Formerly American Darling)
2930 N. 16th. Street
P.O. Box 2727
Birmingham, AL 35202-2727

6. U.S. Pipe & Foundry Co. (205) 254-7215
Valve & Hydrant Products
P.O. Box 10406
Birmingham, AL 35202

7. American R/D, LLC (203) 744-0753
36 Mill Plain Road, Suite 307 FAX (203) 744-0796
Danbury, CT 06811

BUTTERFLY VALVES

MANUFACTURERS:

1. Mueller Company (804) 320-6278
500 West Eldorada Street
P.O. Box 671
Decatur, IL 62525

2. American Flow Control (205) 325-7856
2930 N. 16th. Street
P.O. Box 2727
Birmingham, AL 35202-2727

American Flow Control (770) 730-9925
6900 Roswell Road Apt. P-4 FAX (770) 730-9985
Atlanta, GA 30362-0700

3. DeZurik (612) 259-2000
250 Riverside Ave. North
Sartell, MN 56377

4. Henry Pratt Company (708) 844-4000
401 South Highland Avenue FAX (708) 844-4124
Aurora, IL 60506-5593

5. M & H Valve Company, (205) 237-3521
A Division of McWane, Inc. FAX (205) 237-8630
P.O. Box 2088
Anniston, AL 36202

6. Rodney Hunt Company (508) 544-2511
Orange, MA 01364 FAX (508) 544-7204

	5.	American Flow Control 6900 Roswell Road Apt. P-4 Atlanta, GA 30362-0700	(770) 730-9925 FAX (770) 730-9985
	6.	American R/D, LLC 36 Mill Plain Road, Suite 307 Danbury, CT 06811	(203) 744-0753 FAX (203) 744-0796

LINE STOPPING VALVES

MANUFACTURERS:

	1.	Hydra-Stop Inc. 12601 South Homan Avenue Blue Island, IL 60406	(800) 538-5111

SERVICE MATERIAL

MANUFACTURERS:

METER YOKES (MY), CORPORATION STOPS (CS), COMPRESSION FITTINGS (CF), CURB STOPS (CBS), (See Part V, Section 1 for approved Model #'s)

MY,CS,CF, CBS	1.	Mueller Company 500 West Eldorado Street Decatur, IL 62525	(217) 320-6278
MY,CS,CF, CBS	2.	Ford Meter Box Co., Inc. 775 Manchester Ave. P.O. Box 443 Wabash, IN 46992	(219) 563-3171
		Ford Meter Box Co., Inc. c/o Loyal Butts 1695 Brackets Bend Road Powhatan, VA 23139	(804) 747-9955
MY,CS, CF,CBS	3.	A. Y. McDonald Manufacturing Co. P.O. Box 508 4800 Chavenelle Road Dubuque, IA 52001	(319) 583-7311 or (800) 292-2737
CS	4.	James Jones Company 4127 Temple City Boulevard E1 Monte, CA 91734	(818) 443-6191
CBS,CS, CF	5.	Cambridge Brass P.O. Box 249, 140 Orion Place Cambridge, Ontario NIR-5V1	(519) 621-5520 FAX (519) 621-8038

BF	4.	Tindall Concrete Products, Inc. 3076 N. Blackstock Rd., P.O. Box 1778 Spartanburg, SC 29304	(800) 849-4521 (864) 576-3230 FAX (864) 587-8828
BF	5.	The Clear Flow Company P.O. Box 1467,1321 N. Delphine Ave Waynesboro, VA 22980	(540) 949-8386 FAX (540) 885-3280
BF	6.	Rotondo Precast A Division of Old Castle Precast 5515 Massaponax Church Road Fredericksburg, VA 22407	(540) 898-6300 FAX (540) 898-2389
WM (3″&4″) BF	7.	M&B Concrete Products Inc. P.O. Box 2250 Chester, VA 23832	(804) 748-5557 FAX (804) 748-5557
WM, BF	8.	Bartow Precast P.O. Box 20067 Cartersville, GA 30120 Web Site: www.bartowprecast.com	(770) 382-4462 FAX (770) 382-4480

METER BOXES (for 5/8" and 1" water meters)

MANUFACTURERS:

POLYETHYLENE

1.	Mid-States Plastics, Inc. 280 Midland Trail Mt. Sterling, KY 40353	(800) 444-7615 (606) 498-7615 FAX (606) 498-7919

CAST IRON

1.	Capitol Foundry of Virginia, Inc. 2856 Crusader Circle Mailing Address: P.O. Box 2212 Virginia Beach, VA 23456 Va. Beach,VA 23452	(804) 427-9431

SERVICE SADDLES

MANUFACTURERS:

1.	ROMAC Industries, Inc. 1064 4th Avenue S. Seattle, WA 98134	(800) 426-9341

2. Advance Products & Systems, Inc. (318) 233-6116
P.O. Box 53096 FAX (318) 232-3860
Lafayette, LA 70505-3096

3. PSI Pipeline Seal and Insulator, Inc. (713) 747-6948
6525 Goforth Street FAX (713) 747-6029
Houston, TX 77021

4. Power Seal Pipeline Products Corp. (817) 767-5566
P.O. Box 2014 (800) 800-0932
Wichita Falls, TX 76307 FAX (817) 732-8378

5. BWM Company (866) 577-2237
P.O. Box 414 FAX (838) 245-5494
Forest City, NC 28043

6. CCI Pipeline Systems, LLC (281) 350-2100
P.O. Box 9365 (800) 867-2772
The Woodlands, TX 77387 FAX (281) 288-6261

LUBRICANTS

MANUFACTURERS:

1. J. C. Whitlam Manufacturing Company (800) 321-8358
200 West Walnut Street (330) 334-2524
P.O. Box 380 FAX (800) 537-0588
Wadsworth, Ohio 44282-0380 FAX (330) 334-3005

2. Future Tools, Inc. (740) 927-7712
13591 Cable Road FAX (740) 927-9929
Pataskala, Ohio 43062

WATER SAMPLING STATIONS

MANUFACTURERS:

1. GIL Industries, Inc. (904) 434-3912
P.O. Box 3501
Pensacola, FL 32505

VALVE KEY EXTENSIONS

MANUFACTURERS:

1. West End Machine and Welding, Inc. (804) 266-9631
6804 School Avenue FAX (804) 264-0747
P.O. Box 9444
Richmond, VA 23228
Attn: Dan Heath

(FMC) 4. International Precast Supply (800) 845-3537
60 Railroad Street FAX (978) 372-2831
Haverhill, MA 01835

SEWER SADDLES with approved gaskets

1. ROMAC Industries, Inc. (800) 426-9341
1064 4th. Avenue S.
Seattle, WA 98134

2. GENECO (The General Engineering Co.) (301) 663-9282
Box 609 (800) 345-6454
Frederick, MD 21701 FAX (301) 695-5612

3. INSERTA Fittings Company (503) 357-2110
P.O. Box 767 FAX (503) 359-5417
Hillsboro, OR 97123

AIR/VAC AND COMBINATION VALVES

1. Mulric Hydro Projects (027 11 International)748-0287
(VENT-O-MAT) FAX (027 11 International)422-3078
P.O. Box 16091
Atlasville, 1465 South Africa

2. A.R.I. Flow Control Accessories 972-4-6761988
KFAR CHARUV FAX 972-4-6763402
12932 ISRAEL www.arivalves.com

PLUG VALVES

1. Dezurik (612) 259-2000
250 Riverside Avenue North
Sartell, MN 56377

2. Val-Matic Valve and Manufacturing Corp. (708) 941-7600
905 Riverside Drive FAX (708) 941-8042
Elmhurst, IL 60126

3. Milliken Valve Company, Inc. (215) 861-8803
3864 Courtney Street, Suite 100 FAX (215) 861-8094
Bethlehem, PA 18017

4. Homestead (215) 770-1100
160 Walnut Street FAX (215) 770-1108
Allentown, PA 18102

5. Clow Valve Company, A Div of McWane, Inc. (714) 735-5555
   1375 Magnolia Avenue FAX (714) 735-0837
   Corona, CA 91719

MANHOLE STEPS

1. MA Industries, Inc. (404) 487-7761
   P.O. Box 2322 FAX (404) 631-4679
   Peachtree City, GA 30269

2. BOWCO Industries, Inc. (800) 232-7837
   P.O. Box 22315 FAX (503) 653-8934
   Portland, OR 97222

3. Press-Seal Gasket Corporation (800) 348-7325
   P.O. Box 10482 FAX (219) 436-1908
   Fort Wayne, IN 46852

4. Cosmos North America (202) 333-3955
   P.O. Box 25532 FAX (202) 333-6427
   Washington, DC 20007

5. American Step Company (800) 988-STEP
   P.O. Box 137 FAX (770) 467-8011
   Griffin, GA 30224-0137

6) Seating shall use compression closure. The gate shall be of a true bi-directional, mirror image design.

7) Valves shall have a smooth bottom design.

8) Valves shall have a port in the bottom of the gate to allow purging of the gate.

9) All valves shall open left and have end connections of Mechanical Joint, or as specified by the Department of Public Utilities.

10) All castings shall be clean and sound without defects. The castings shall be clean and perfect without blow or sand holes or defects of any kind. No plugging, welding or repairing of cosmetic defects will be allowed.

11) Valves 3" through 12" must have a minimum 200 psi working and 400 psi test pressure.

12) If the standard valve provided by a Manufacturer does not fully comply with these specifications, but compliance can be attained by providing optional features, then each valve must be permanently marked to indicate the option or options that have been provided. The method of marking valves to indicate that options are included must be approved by the Product and Design Review Committee.

13) All bonnet bolts must be stainless steel.

b. Resilient Seated Wedge Tapping Valves:

1) Tapping valves shall meet above specifications as referenced in 2.a. above. The outlet end shall be suitable for use with the type of pipe specified, either M.J. or Hub end.

2) Tapping valves will be suitable for use with all approved manufactured tapping sleeves without modification.

10) Main Valve, Rod Assembly: The main valve rod assembly shall be so constructed to allow removal of all operating parts through the standpipe regardless of depth of bury, using a removal wrench which does not extend below the groundline of the hydrant. The main valve seat ring shall be bronze and its assembly into the hydrant shall involve bronze to bronze thread engagement, and the valve assembly pressure seals shall be obtained without the employment of torque compressed gaskets. The design of the main valve rod shall be such that the operating threads at the top of the rod and the valve assembly threads at the bottom of the rod are isolated from contact with water in the standpipe or in the hydrant inlet shoe.

11) Drain Valve: The operation of the drain mechanism shall be correlated with the operation of the main valve and shall involve a momentary flushing of the drain ports each time the hydrant is opened. The drain ports shall be fully closed when the hydrant valve is more than 2½ turns open and the drainage channel in the bronze valve seat ring shall connect to two or more outlet drain ports. Springs may be employed in the hydrant valve or drain valve mechanism.

12) Depth of Bury: Hydrant shall be suitable for installation in trenches 4½' deep, unless otherwise specified.

13) Painting Instruction: Two prime coats and one aluminum finish coat shall be used, unless otherwise specified. Exposed area of fire hydrant shall receive one field coat of aluminum after installation. The wetted surface of the hydrant shoe shall be epoxy coated to prevent corrosion of the waterway.

14) Pressure Rating: Test pressure 300 psi, working pressure 150 psi.

    a. If the standard hydrant provided by a manufacturer does not fully comply with these specifications, but compliance can be attained by providing optional features, then each hydrant must be permanently marked to indicate the option or options that have been provided. The method of marking hydrants to indicate that options are included must be approved by the Product and Design Review Committee.

e. Ultra-Rib PVC Gravity (non-pressure) sewer pipe (21"-36") shall meet requirements of ASTM F794 and fittings shall meet the requirements of ASTM 3034-35 PVC sewer pipe with elastometric gasket joints meeting requirements of ASTM D3212. Bedding shall be as required by the County for plastic pipes as shown in the County's Standard Details.

f. Carlon Vylon H.C. PVC Gravity (non-pressure) sewer pipe (21"-48") shall meet requirements of ASTM F1803 and fittings shall meet the requirements of ASTM 3034-35 PVC sewer pipe with elastomeric gasket joints meeting requirements of ASTM D3212. Bedding shall be as required by the County for plastic pipes as shown in the County's Standard Details.

g. Ultra-Corr PVC sewer (non-pressure) pipe (24"-36") shall be seamless profile wall and meet the requirements of ASTM F1803 and fittings shall meet the requirements of ASTM 3034-35 PVC sewer pipe with elastomeric gasket joints meeting requirements of ASTM D3212. Bedding shall be as required by the County for plastic pipes as shown in the County's standard details. Pipe shall have a smooth interior with a corrugated cross-sectional rib exterior. Exterior corrugations shall be perpendicular to the axis of the pipe to allow placement of the sealing gasket without field marking, beveling, sealing channels, gluing, welding, additional cutting or machining. The pipe stiffness shall be a minimum of 50 psi when tested at 5% deflection in accordance with D2412. Pipe shall be green in color.

h. Ductile iron (gravity or pressure) pipe shall meet requirements of AWWA C151. Pipe shall be thickness Class 52. Pipe shall have cement-mortar lining and a bituminous seal coat. Thickness classes shall meet requirement of AWWA C150.

i. Pressure Pipe and fittings shall have either mechanical joint or push-on joint, both conforming to the requirements of AWWA C111. Bolts shall be high strength cast iron having an ultimate tensile strength of 75,000 psi and a minimum yield point of 45,000 psi.

j. Pressure Pipe fittings shall meet the requirements of AWWA C110 (ductile iron or cast iron) or AWWA C153 (ductile iron compact). All fittings shall be Pressure Class 250. Fittings shall have a cement-mortar lining and a bituminous seal coating or a 6-8 mil (nominal thickness) fushion bond epoxy lining/coating in compliance with AWWA C550.